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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of
David J. CHAIKO

Date: June 29, 2004

Serial No.: 10/078,992

Docket No. 051583-0260

Filed: February 20, 2002

Group Art Unit: 1714

Examiner: Katarzyna
Wyrozelski Lee

For: **PROCESS FOR THE PREPARATION OF ORGANOCCLAYS**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on June 29, 2004.

Joseph P. Meara

(Name of Applicant, assignee
or Registered Representative)

(Signature)

June 29, 2004

(Date of Signature)

DECLARATION UNDER 37 C.F.R. §1.132 OF DAVID J. CHAIKO

I, David J. Chaiko, state and declare that:

1. I am a citizen of the United States of America, residing at 1503 Conan Doyle Road, Naperville, Illinois 60564.
2. I am an employee of Argonne National Laboratories located in Chicago, Illinois.

003.600143.1

USSN 10/078,992

3. I am an inventor of U.S. Application Serial No. 10/078,992 ("the application") and of U.S. Patent No. 6,172,121 ("the '121 Patent"). I am also the inventor of the aqueous biphasic extraction method, the subject matter of U.S. Patent Nos. 5,411,149 and 5,625,862. I have reviewed the Office Action, mailed April 30, 2004, and the prior art cited therein including the '121 Patent.

4. The subject matter of the '121 Patent relates to a process for treating low-grade clay ores to achieve high levels of purification and/or to incorporate surface modifying agents onto the clay. As shown in Figure 1 of the '121 Patent, in one step of the process, the clay is dispersed in a polymer rich phase of an aqueous biphasic extraction system. The aqueous biphasic system is a heterogeneous liquid/liquid system that results from the use of immiscible combinations of inorganic salts and water soluble polymers such polyethylene glycol. In order to form their aqueous biphasic system, an excess of polymer in comparison to the weight of the clay must be used. For example, the '862 Patent illustrates a biphasic having 15 wt. % of polyethylene glycol (molecular weight 3400) and a second phase of 7.5 wt. % sodium sulfate.

5. Any clay suspended in the aqueous biphasic system will partition into the polymer rich phase and polymer will adsorb onto the surface of the clay platelets to form an organoclay. After liquid/liquid phase separation, the organoclay is recovered from the polymer-rich phase by flocculation with a commercial flocculent. As detailed in Examples 1, 3, 4, 5, and 9 of the '121 patent, the flocculated organoclay is washed with dionized water to remove excess polymer and salt originating from the polymer-rich phase of the aqueous biphasic extraction system.

6. At this point in the process, the organoclay will contain at least a complete monolayer coating of the polymer on each clay platelet surface. It is not possible for less than a complete monolayer of polymer to be present on the organoclay after the aqueous biphasic extraction. Use of less than an excess of polymer for the extraction process would not allow for a formation of the aqueous biphasic and therefore would not allow the process to be carried out.

7. Subsequent treatment of the organoclay resulting from the aqueous biphasic extraction process with, for example, quaternary ammonium salts, will remove some or

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all of the polymer depending on the amount of ammonium salt used. Therefore, the '121 patent discloses a two-step process to provide organoclay with an organic content of 20-30 wt. % or less. One of ordinary skill in the art would understand that the amount of organic content of the final product of the processes taught by the '121 patent does not disclose direct adsorption of less than a complete monolayer of polymer on the surface of the clay.

8. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or of any patent resulting therefrom.

Date: 6.29.04

By:



David J. Chaiko